

## OSTRACODA FROM THE WEST COAST OF CENTRAL AMERICA (MYODOCOPINA: CYPRIDINACEA)

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*Abstract.*—*Rutiderma pax*, new species, is described and illustrated from specimens collected off the west coast of El Salvador. An A-1 female of *Zeugophilomedes fonsecensis* (Hartmann, 1959) from El Salvador is described. The range in the Pacific of the genus *Harbansus* Kornicker, 1978, is extended to El Salvador.

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While preparing a paper on the Rutidermatidae of Southern California (Kornicker and Myers 1981), I borrowed for comparative purposes from the Hamburg Zoological Museum and Zoological Institute, Germany, a vial of specimens from El Salvador that had been referred to *Rutiderma rostratum* Juday, 1907, by Hartmann (1959:198). We concluded in our paper that the specimens, although having a carapace similar to that of *R. rostratum*, are not that species; neither are they *R. hartmanni* Poulsen, 1965, to which they had been referred by Poulsen (1965:32) (Kornicker and Myers 1981:4). The species is described as *Rutiderma pax*, new species, herein.

The vial with *Rutiderma pax* also contained two additional species: one A-1 female of *Zeugophilomedes fonsecensis* (Hartmann, 1959) and one imperfect ovigerous female of an unidentified species of *Harbansus*. Because the morphology of many appendages of *Z. fonsecensis* has not been described previously, the A-1 female is described herein. The occurrence of *Harbansus* off El Salvador is noted because previously the genus had not been reported in the Pacific off Central America (Kornicker 1978:49).

All specimens have been returned to Dr. Gerd Hartmann, Hamburg Zoological Museum and Zoological Institute, Hamburg, Germany.

### *Rutiderma pax*, new species Figs. 1-3a

*Rutiderma rostrata*.—Hartmann, 1959:198.—Kornicker and Myers, 1981:4 (only specimens of Hartmann).

*Rutiderma hartmanni* Poulsen, 1965:32 (part; includes only *R. rostrata* of Hartmann in synonymy).

*Etymology.*—From the Latin *pax*, meaning “peace,” used as a noun in apposition.

*Holotype.*—Ovigerous female, specimen labeled number 3, on slide and in alcohol; part of lot number 27314, Zoologisches Institut und Zoologisches Museum der Universität, Hamburg, West Germany.

*Type-locality.*—Off Mejanguera Island, Gulf of Fonseca, El Salvador, sublittoral, depth 12 m (Hartmann 1959:195, 196).

*Paratypes.*—All from same sample as holotype (lot number 27314): Specimen number 1 and 2, disarticulated left and right valves; specimen number 4, 1 ovigerous female; 14 specimens (adult females and juveniles of both sexes).

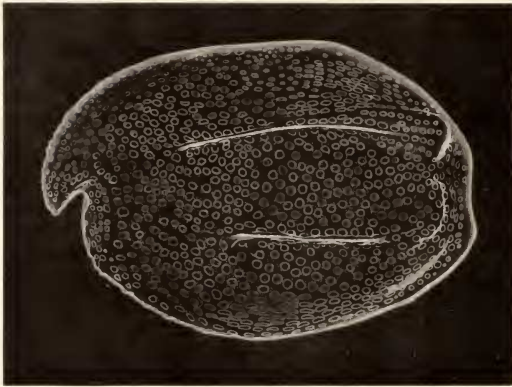


Fig. 1. *Rutiderma pax*, adult female, holotype, complete specimen, length 1.00 mm.

*Distribution.*—Collected only at type-locality.

*Description of adult female* (Figs. 1–3a).—Carapace more-or-less ovoid in lateral view with overhanging rostrum (Figs. 1, 2a); caudal process narrow, projecting posteriorly only slightly (Figs. 1, 2b, c).

*Ornamentation:* Two faint ribs present, one dorsal and one ventral to central adductor muscle attachments (Fig. 1); 2 low swellings present in posterior part of valve (Fig. 1); valve surface with abundant small oval fossae; anterior end of rostrum with minute scallops (Fig. 1).

*Infold:* Infold of rostrum with 7 bristles forming row parallel to anterior margin (Fig. 2a); 2 short bristles present at inner edge of incisur; anteroventral infold and anterior end of infold of ventral margin with total of about 5–6 bristles forming row parallel to anterior margin (bristle near incisur with wide space between it and following bristles); posteroventral infold including caudal process with 13–14 bristles (about 7 of these on caudal infold) (Fig. 2b, c); infolds of caudal process of left and right valves similar (Fig. 2b, c).

*Selvage:* Wide lamella prolongation fringed along anterior and ventral margins except along posterior end of latter; prolongation narrower and without fringe along edge of caudal process and posterior margin of valve; selvage divided at inner end of incisur. (Selvage not divided at edge of caudal process as on *R. rostratum* (see Kornicker and Myers 1981:fig. 2b).)

*Size:* Specimen no. 3, length 1.00 mm, height 0.71 mm; specimen no. 1, left valve, length 1.00 mm, height 0.70 mm; specimen no. 2, right valve, length 0.95 mm, height 0.66 mm; specimen no. 4, length 1.00 mm, height 0.70 mm; ovigerous female, length 0.97 mm, height 0.64 mm. (Disarticulated valves labelled specimens 1 and 2 did not have appendages so assumption that they are adult females may be false.)

*First antenna:* Similar to that of *R. rostratum* illustrated by Kornicker and Myers (1981:fig. 2d).

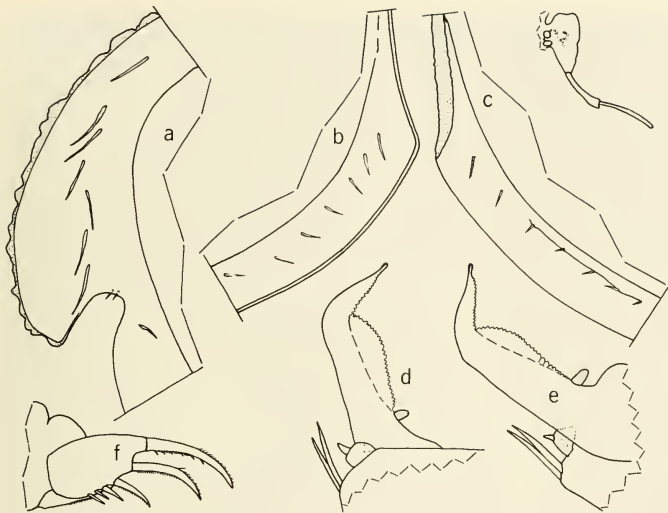


Fig. 2. *Rutiderma pax*, adult female, holotype: a, Rostrum of right valve, inside view; b, Caudal process of right valve, inside view; c, Caudal process of left valve, inside view; d, Stout terminal claw of 2nd endopodial joint of right mandible, medial view; e, same, left mandible, lateral view; f, medial eye and organ of Bellonci.

Second antenna: Protopodite bare. Endopodite similar to that of *R. rostratum* illustrated by Kornicker and Myers (1981:fig. 2c). Exopodite similar to that of *R. rostratum* described by Kornicker and Myers (1981:6).

Mandible: Similar to that of *R. rostratum* illustrated by Kornicker and Myers (1981:fig. 2e), except for produced tip of stout terminal claw of 2nd endopodial joint being about  $\frac{1}{2}$  length of that of *R. rostratum* (Figs. 2d, e, 3a).

Maxilla: Similar to that of *R. rostratum* illustrated by Kornicker and Myers (1981:fig. 2f).

Fifth limb: Epipodial appendage with 37 bristles. Except for having only 1 bristle on inner lobe of 3rd exopodial joint on single limb examined, limb similar to that of *R. rostratum* described and illustrated by Kornicker and Myers (1981: 6, fig. 2h-j).

Sixth limb: 2 bristles (shorter of these hirsute, other bare) in place of epipodial bristle on single limb examined. Except for having 2 instead of 3 bristles on 4th endite, endites similar to that of *R. rostratum* described and illustrated by Kornicker and Myers (1981:7, fig. 2k). End joint with 3 anterior bristles on projection having depth about  $\frac{1}{2}$  that of limb of *R. rostratum* illustrated by Kornicker and Myers (1981:fig. 2k), limb otherwise similar.

Seventh limb: Each limb with 3 or 4 proximal bristles (1 or 2 on each side)

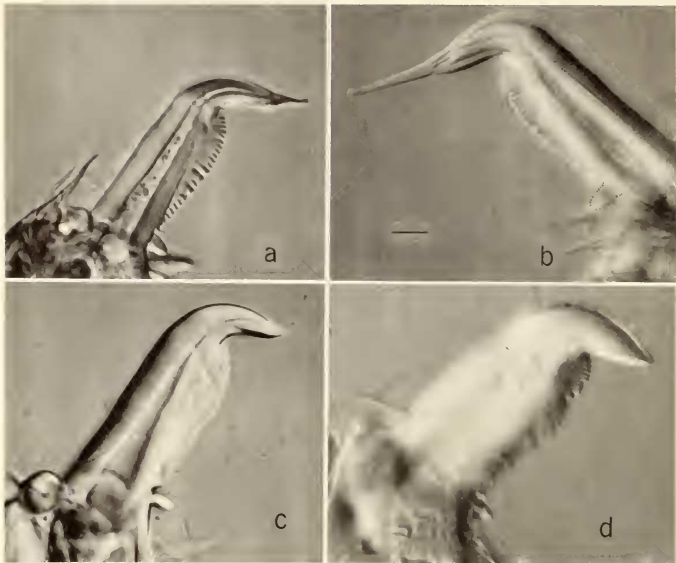


Fig. 3. Stout terminal claw of 2nd endopodial joint of mandible of adult female, medial views: a, *Rutiderma pax*, holotype, right limb; b, *Rutiderma rostratum*, USNM 158222, left limb; c, *Rutiderma licinum*, USNM 154187, right limb; d, *Rutiderma rostratum*, USNM 110918, right limb. Photographs taken by Dr. Robert P. Higgins using Nomarski interference contrast. Length of scale bar 10  $\mu$ m.

and 5 or 6 distal bristles (2 or 3 on each side); each bristle with up to 6 bells and marginal spines; terminus with opposing combs.

Furca (Fig. 2f): Each lamella with 4 stout claws followed by 2 weak secondary claws. On some specimens 4th claw could be interpreted to be large secondary claw.

Beilonci organ (Fig. 2g): Elongate, broadening near middle and with broadly rounded tip and suture near middle.

Eyes: Medial eye with brown pigment, tapering anteriorly (Fig. 2g). Lateral eyes absent.

Y-sclerite: Typical for genus.

Number of eggs: Specimen no. 3 and the unnumbered female each with 1 large egg in marsupium.

*Comparisons.*—Three species similar to *R. pax* in having carapaces with poorly defined lateral ribs and in not having a prominent backward projecting caudal process are *R. rostratum* Juday, 1907, *R. licinum* Kornicker, 1983a, and a species identified as *R. rostratum* Juday by McKenzie (1965), but which is probably a new species (USNM 110918). The three species can be distinguished from *R. pax*,

as well as from each other, by the morphology of the tip of the stout terminal claw of the second endopodial joint of the female mandible (Fig. 3).

*Zeugophilomedes* Kornicker, 1983

*Type-species.*— *Philomedes multichelata* Kornicker, 1958.

*Remarks.*—Although main claws other than claws 1 and 2 on the furcae of members of this genus are fused to the lamella, a low lip extending the length of the inner side of the lamella at the base of the fused main claws has led to illustrations that could be misinterpreted as indicating sutures at the base of the fused claws (Kornicker 1958:fig. 50E; 1967b:fig. 3f, g; Hartmann 1959:fig. 29: 2, 4).

The three species of *Zeugophilomedes* from the eastern Pacific and western Atlantic, *Z. oblongus* (Juday, 1907:145); *Z. fonsecensis* (Hartmann, 1959:197); *Z. multichelatus* (Kornicker, 1958:230; 1967b:2) have an unusual forked end joint on the 6th limb suggesting that they are more closely related to each other than to the two species from the Indian Ocean and Red Sea, *Z. arostratus* (Kornicker, 1967a:2; 1967c:14) and *Z. polae* (Graf, 1931:37; Kornicker, 1967c:2) on which the end joint is not forked. The 6th limb of *Z. fonsecensis* is described for the first time herein. The forked nature of the 6th limb of *Z. oblongus* was observed during the present study on a female (USNM 139159) from Monterey Bay, California.

*Zeugophilomedes fonsecensis* (Hartmann, 1959)

Fig. 4

*Philomedes fonsecensis* Hartmann, 1959:197, pl. 29:1–5, pl. 33:34.

*Euphilomedes fonsecensis.*—Poulsen, 1962: 363 [key].

*Zeugophilomedes fonsecensis.*—Kornicker, 1983b:478.

*Holotype.*—Not extant.

*Type-locality.*—Gulf of Fonseca, El Salvador (Hartmann 1959: 197).

*Material.*—1 A-1 female, El Salvador, sublittoral, depth 12 mm.

*Remarks.*—Dr. Hartmann (1959:197) described and illustrated an adult female and a juvenile male. A single specimen (A-1 female) received in a collection borrowed from Dr. Hartmann provided the opportunity to study the species and to describe the A-1 female.

*Description.*—Carapace similar in shape to adult female illustrated by Hartmann (1959:pl. 33:34). Minute rounded lateral process at inner end of incisur. Central adductor muscle attachments similar to those of *Z. multichelatus* illustrated by Kornicker (1967b:fig. 4e). Bristles of infold similar to those illustrated for *Z. multichelatus* by Kornicker (1967b:fig. 4f, g).

*Size:* Length 0.79 mm, height 0.49 mm.

First antenna (only right limb examined): 1st joint bare. 2nd joint with ventral and medial spines and 3 bristles (1 ventral, 1 dorsal, 1 lateral). 3rd joint short with ventral spines, 1 ventral bristle and 2 dorsal bristles (1 long, 1 short). 4th joint elongate with ventral spines and 3 bristles (2 ventral, 1 dorsal). 5th joint elongate; sensory bristle with 2 short proximal filaments and 3 distal filaments (2 short, 1 long). 6th joint minute, fused to 5th joint, with spinous medial bristle near dorsal margin (bristle longer than 4th joint). 7th joint: a-bristle about same

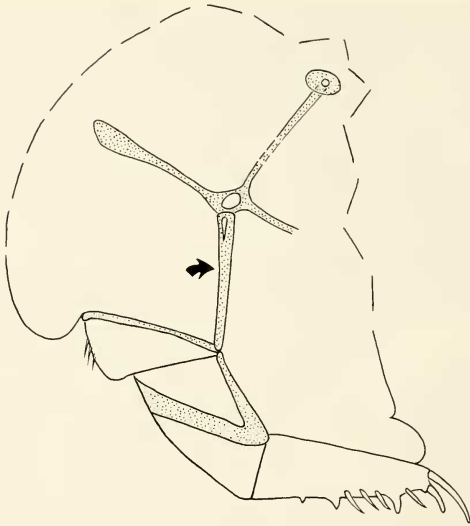


Fig. 4. *Zeugophilomedes fonsecensis*, specimen 3, A-1 female, posterior of body from right side showing right lamella of furca, right Y-sclerite (arrow), and additional sclerites (stippled).

length as bristle of 6th joint, with numerous long hairs near middle; b-bristle about  $\frac{2}{3}$  length of sensory bristle of 5th joint, with short filament near tip; c-bristle slightly shorter than sensory bristle of 5th joint, with 2 short proximal filaments and 3 distal filaments (2 short, 1 long). 8th joint: d- and e-bristles subequal (d-bristle slightly longer and stouter than e-bristle and slightly longer than c-bristle), bare, with blunt tips; f-bristle slightly shorter than c-bristle but longer than b-bristle, with 2 short proximal filaments and 3 distal filaments (2 short, 1 long). Tips of filaments and stems of b-, c-, f-, g-bristles as well as sensory bristle of 5th joint with 1 or 2 minute processes.

Second antenna: Protopodite bare. Endopodite similar to that of *Z. multichelatus* (see Kornicker 1967b:fig. 5d). Exopodite: 1st joint with minute, medial, terminal bristle; bristles of joints 2-8 short, with closely spaced ventral spines but without natatory hairs; 9th joint with 4 bristles (ventral bristle about same length as joints 2-9, with ventral spines; dorsal bristles short, bare).

Mandible: Coxale endite bifurcate, spinous. Basale: dorsal margin with stout midbristle with long spines near middle, and 2 long terminal bristles; about 10 short bristles on or near ventral margin (see Kornicker 1967b:fig. 5i). Exopodite reaching past middle of dorsal margin of 1st endopodial joint, with spinous tip and 2 subterminal bristles (shorter of these about  $\frac{1}{2}$  length of other). 1st endopodial joint with 4 ventral bristles (1 short, others long). 2nd endopodial joint: ventral

margin with bristles forming 2 distal groups (proximal group with 2 ringed bristles; dorsal group with 2 pectinate unringed bristles and 1 ringed bristle); dorsal margin with 2 ringed bristles proximal to middle and 5 near middle; medial side near midbristles with indistinct broad but short bristle resembling triaenid bristle. End joint with 2 long claws, 1 minute dorsal claw, and 3 ringed bristles. Basale and 2nd endopodial joint with spines forming rows.

Maxilla: Precoxale and coxale with dorsal fringe of long hairs. Coxale with short dorsal bristle. Basale with 2 long terminal bristles (1 ventral, 1 dorsal), both with long spines near middle; 1 short, lateral, proximal bristle present near base of endites. 1st endopodial joint with 1 alpha-bristle with long spines near middle, and 2 beta-bristles (longer of these about same length as alpha-bristle and with short marginal spines). 2nd endopodial joint with about 8 claws and bristles. Exopodite with 3 bristles (2 long, 1 short). 3 endites present, each with 4 or more bristles.

Fifth limb: Similar to that of *Z. multichelatus* described and illustrated by Kornicker (1967b:8, fig. 6d-f). Exopodite: a stout bristle present on posterior side of 2nd joint proximal to pair of bristles shown by Kornicker (1967b:fig. 6e); 1 small bristle present at outer distal corner of 2nd joint; inner lobe of 3rd joint with 3 bristles; outer lobe with 2 bristles; 4th and 5th joints fused, with total of 6 bristles.

Sixth limb: Similar to that of *Z. multichelatus* described and illustrated by Kornicker (1967b:9, fig. 6g). Endite I missing; endite II with 1 short proximal medial bristle and 3 spinous end bristles; endite III with 7 spinous terminal bristles; bristles of endite IV inadvertently not counted. End joint bilobate as on *Z. multichelatus* (Kornicker 1967b:fig. 6g); 5 bristles along distal margin of anterior lobe, 3 stout hirsute bristles followed by 1 small bristle on posterior lobe (small bristle could represent epipodite).

Seventh limb: Each limb with 1 proximal bristle with 2 distal bells, and 5 terminal bristles (3 on peg side, 2 on comb side), each bristle with 1-2 terminal bells; all bristles strongly tapering (juvenile character), some with marginal spines. Terminus consisting of 1 pointed peg and 1 elongate peg, both opposite central fanlike comb having smaller fan on each side (Kornicker 1967b:fig. 6i).

Furca (Fig. 4): Each lamella with 2 stout anterior claws with sutures separating them from lamella, followed by 1 secondary claw, 1 primary claw fused to lamella, 3 secondary claws, 1 primary claw fused to lamella, then a space and 1 small primary claw fused to lamella. Claw 1 with about 16 teeth along lateral side and about 10 teeth along medial side (proximal medial teeth much larger than others); claw 2 with slender teeth forming medial and lateral row; secondary claws with slender teeth along posterior edge; teeth not observed on 3rd primary claw; last and next-to-last primary claws with teeth forming row extending obliquely onto lateral side of lamella; a few minute spines present along anterior edge of lamella; medial hairs not observed at base of claws or on lamella following claws.

Y-sclerite (Fig. 4): Linear, typical for genus.

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#### Literature Cited

- Graf, H. 1931. Expedition S.M.S. "Pola" in das Rote Meer: Die Cypridinae des Roten Meeres.—Denkschriften der Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse 102:32–46.
- Hartmann, Gerd. 1959. Zur Kenntnis der lotischen Lebensbereiche der pazifischen Küste von El Salvador unter besonderer Berücksichtigung seiner Ostracodenfauna.—Kieler Meeresforschungen 15(2):187–241.
- Juday, Chauncy. 1907. Ostracoda of the San Diego region, II: Littoral forms.—University of California Publications in Zoology 3(9):135–156.
- Kornicker, Louis S. 1958. Ecology and taxonomy of Recent marine ostracodes in the Bimini area, Great Bahama Bank.—Publications of the Institute of Marine Sciences (The University of Texas) 5:194–300.
- . 1967a. *Euphilomedes arostrata*, a new myodocopid ostracod from Maldive Islands, Indian Ocean.—Proceedings of the United States National Museum 120(3563):1–21.
- . 1967b. Supplementary description of the myodocopid ostracod *Euphilomedes multichelata* from the Great Bahama Bank.—Proceedings of the United States National Museum 120(3566):1–16.
- . 1967c. Supplementary descriptions of two myodocopid ostracods from the Red Sea.—Proceedings of the United States National Museum 121(3571):1–18.
- . 1978. *Harbansus*, a new genus of marine Ostracoda, and a revision of the Philomedidae (Myodocopina).—Smithsonian Contributions to Zoology 260:1–75.
- . 1983a. Rutidermatidae of the Continental Shelf of Southeastern North America and the Gulf of Mexico (Ostracoda: Myodocopina).—Smithsonian Contributions to Zoology 371:1–89.
- . 1983b. *Zeugophilomedes*, a new genus of myodocopine ostracode (Philomedinae).—Proceedings of the Biological Society of Washington 96(3):478–480.
- , and Brad Myers. 1981. Rutidermatidae of Southern California (Ostracoda: Myodocopina).—Smithsonian Contributions to Zoology 334:1–35.
- McKenzie, K. G. 1965. Myodocopid Ostracoda (Cypridinacea) from Scammon Lagoon, Baja California, Mexico, and their ecologic associations.—Crustaceana 9(1):57–70.
- Poulsen, E. M. 1965. Ostracoda-Myodocopa, 2: Cypridiniformes-Rutidermatidae, Sarsiellidae and Asteropidae.—Dana-Report 65:1–484.

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